

Explosive atmospheres ATEX Dust The essential guide



Explosive Atmospheres

A wide range of products designed to operate in environments subject to risks!



A reference for installations in ATEX Dust explosive atmospheres.

What is an explosive atmosphere according to the Directive?

It is the mixing with air, in atmospheric conditions, of flammable substances in the form of gas, vapour, mist or dust which, in the event of combustion, spreads throughout the non burning mix.

Implementation of European Directives

■ Directive 99/92/EC

This requires that a risk analysis be performed for all industrial processes.

If there is any risk of an explosion:

- the zones are defined and physically identified,
- the installation is classified by governing bodies.

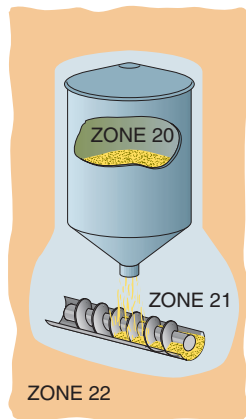
■ Directive 94/9/EC

This requires certification of the products in accordance with the classification of the zones of use

■ Dust zones

- Zone 20: area where an explosive atmosphere exists in the form of combustible clouds of dust in the air, either permanently, for long periods or frequently.
- Zone 21: area where an explosive atmosphere exists in the form of combustible clouds of dust in the air during normal operation occasionally.
- Zone 22: area where an explosive atmosphere in the form of combustible clouds of dust in the air is unlikely to occur during normal operation but, if it does occur, it is only for a short period.

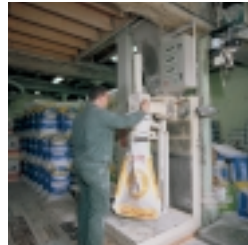
The products in this catalogue are certified by a European Union Commission notified body.



Flour mills



Bagging

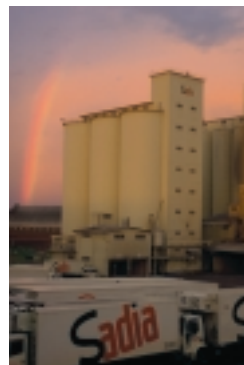


Main sectors of activity subject to a higher risk of explosion or fire

Grain drying areas



Grain silos



Wood and aluminium workshops



Bulk conveying



The essential guide

A selection of certified products, conforming to the European Directive ATEX94/9/EC, to ensure maximum safety for your installations in a zone where the risk of explosion or fire is high.

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Inductive proximity sensors


Universal, metal case



Sensor type	3-wire DC PNP, flush mountable in metal			
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)	21 - 22			
EC type examination certificate number / marking	INERIS 04ATEX0022X /  II 2 D-Ex tD A21 IP68 T90°C			
Nominal sensing distance Sn	4 mm	8 mm	15 mm	
Operating zone	0...3.2 mm	0...6.4 mm	0...12 mm	
Temperature range	- 20...+ 60°C			
Degree of protection (conforming to IEC 60529)	IP68			
Connection	Pre-cabled, PvR, L = 10 m			
Dimensions	M12 x 50 mm	M18 x 60 mm	M30 x 60 mm	
Supply voltage (including ripple)	10...58 V DC			
Maximum switching capacity	200 mA			
Overload and short-circuit protection	Yes			
LED output state indicator	Yes			
Voltage drop, closed state, at I nominal	≤ 2 V			
Switching frequency	2500 Hz	1000 Hz	500 Hz	
References	NO function	XS612B1PAL10EX	XS618B1PAL10EX	XS630B1PAL10EX
	NC function	XS612B1PBL10EX	XS618B1PBL10EX	XS630B1PBL10EX

Analogue, metal case



Sensor type	Analogue, 2-wire AC/DC, flush mountable in metal			
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)	21 - 22			
EC type examination certificate number / marking	INERIS 04ATEX0022X /  II 2 D-Ex tD A21 IP67 T90°C			
Nominal sensing distance Sn	2 mm	5 mm	10 mm	
Operating zone	0.2...2 mm	0.5...5 mm	1...10 mm	
Temperature range	- 20...+ 60°C			
Degree of protection (conforming to IEC 60529)	IP67			
Connection	Pre-cabled, PvR, L = 2 m			
Dimensions	M12 x 50 mm	M18 x 60 mm	M30 x 60 mm	
Supply voltage (including ripple)	10...38 V DC			
Linearity error	10%			
Operating frequency	1500 Hz	500 Hz	300 Hz	
References	4...20 mA output	XS1M12AB120EX	XS1M18AB120EX	XS1M30AB120EX

Proximity sensors

Rotation monitoring, metal case



M30

Sensor type	3-wire DC PNP, flush mountable in metal	
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1	
Zone D (dust)	21 - 22	
EC type examination certificate number / marking	INERIS 04ATEX0022X / II2 D-Ex tD A21 IP67 T90°C	
Nominal sensing distance Sn	10 mm	
Operating zone	0...8 mm	
Temperature range	- 20...+ 60°C	
Degree of protection (conforming to IEC 60529)	IP67	
Connection	Pre-cabled, PVR, L = 2 m	
Dimensions	M30 x 81 mm	
Supply voltage (including ripple)	10...58 V DC	
Maximum switching capacity	200 mA	
Overload and short-circuit protection	Yes	
LED output state indicator	Yes	
Voltage drop, closed state, at I nominal	≤ 2 V	
Version	Slow	Fast
Maximum speed of passing object	6000 impulses/minute	48,000 impulses/minute
Adjustable frequency range	6...150 impulses/minute	120...3000 impulses/minute
References	NC function XSAV11373EX	XSAV12373EX

Capacitive, metal case



M12



M18




M30

Sensor type	3-wire DC PNP, flush mountable in metal		
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1		
Zone D (dust)	21 - 22		
EC type examination certificate number / marking	INERIS 04ATEX0022X / II2 D-Ex tD A21 IP67 T90°C		
Nominal sensing distance Sn	2 mm	5 mm	10 mm
Operating zone	0...1.4 mm	0...3.6 mm	0...7.2 mm
Temperature range	- 20...+ 60°C		
Degree of protection (conforming to IEC 60529)	IP67		
Connection	Pre-cabled, PVC, L = 2 m		
Dimensions	M12 x 50 mm	M18 x 60 mm	M30 x 60 mm
Supply voltage (including ripple)	10...38 V DC		
Maximum switching capacity	300 mA		
Overload and short-circuit protection	Yes		
LED output state indicator	Yes		
Voltage drop, closed state, at I nominal	≤ 2 V		
Switching frequency	100 Hz		
References	NO function XT1M12PA372EX	XT1M18PA372EX	XT1M30PA372EX
	NC function XT1M12PB372EX	XT1M18PB372EX	XT1M30PB372EX

Namur inductive sensors


Metal or plastic case



Sensor type	2-wire DC, flush mountable in metal					
Case type	Metal			Plastic		
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, EN 50020, EN 50284, pr IEC 61241-0, pr IEC 61241-1					
Zone D (dust)	20 (to be used in conjunction with intrinsically safe enclosures, see page 5)					
EC type examination certificate number / marking	INERIS 04ATEX0016X /  II 1 D-Ex iaD 20 IP66/67 T85°C					
Nominal sensing distance Sn	0.8 mm	1.5 mm	2 mm	5 mm	10 mm	
Operating zone	0...0.6 mm	0...0.8 mm	0...1.2 mm	0...1.6 mm	0...4 mm	0...8 mm
Temperature range	- 20...+ 60°C					
Degree of protection (conforming to IEC 60529)	IP67					
Connection	Pre-cabled, PvR, L = 2 m					
Dimensions	M5 x 30 mm	M8 x 26.5 mm		M12 x 38.5 mm	M18 x 41 mm	M30 x 43.5 mm
Supply voltage (including ripple)	7...12 V DC					
Current consumption, open state (without target)	≥ 3 mA					
Overload and short-circuit protection	Yes					
Residual current, open state (with target)	≤ 1 mA					
Switching frequency	1500 Hz		1000 Hz	800 Hz	500 Hz	300 Hz
References	NC function		XSMN08122EX	XSAN01122EX	XSPN01122EX	XSPN02122EX
			XSPN05122EX	XSPN10122EX		

Plastic case



Sensor type	2-wire DC, non flush mountable in metal					
Case type	Plastic					
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, EN 50020, EN 50284, pr IEC 61241-0, pr IEC 61241-1					
Zone D (dust)	20					
EC type examination certificate number / marking	INERIS 04ATEX0016X /  II 1 D-Ex iaD 20 IP66/67 T85°C					
Nominal sensing distance Sn	4 mm	8 mm	15 mm	15 mm	40 mm	
Operating zone	0...3.2 mm	0...6.4 mm	0...12 mm	0...12 mm	0...32 mm	
Temperature range	- 20...+ 60°C					
Degree of protection (conforming to IEC 60529)	IP67					
Connection	Pre-cabled, PvR, L = 2 m			Screw terminals		
Dimensions	M12 x 38.5 mm	M18 x 41 mm	M30 x 43.5 mm	40 x 40 x 122.5 mm	100 x 80 x 40 mm	
Supply voltage (including ripple)	7...12 V DC					
Current consumption, open state (without target)	≥ 3 mA					
Overload and short-circuit protection	Yes					
LED output state indicator	Yes					
Residual current, open state (with target)	≤ 1 mA					
Switching frequency	400 Hz	300 Hz	200 Hz	100 Hz	25 Hz	
References	NC function		XSPN04122EX	XSPN08122EX	XSPN15122EX	XSCN151229EX (1)
			XSDN401229EX			

(1) Flush mountable in metal



Intrinsically safe enclosures

Processing module



Module type		Discrete					
		Inputs		Relay inputs/outputs			
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50020					
Zone D (dust)		Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)					
EC type examination certificate number / marking		LCIE 00ATEX6034X / II 1 G/D-EEx ia IIC					
Zone 20	Number of input channels	2	4	2	2		
	Number of output channels	-		1	1		
	Type of output channel, load excitation	-		Low consumption solenoid valve, < 7 mA	High consumption solenoid valve, < 40 mA		
				- with hysteresis	- with hysteresis		
Outside zone	Number of recopying channels	2	4	2	2		
	Switching voltage	5...230 V AC; 5...24 V DC					
	Switching current	10 mA...0.5 A (AC); 10 mA...0.5 A, L/R 48 ms (DC)					
Temperature range		- 20...+ 60°C					
Connection		Removable screw terminal blocks					
Mounting		On 35 mm DIN rail					
Dimensions, W x D x H		29.5 x 120 x 90 mm					
Supply voltage (including ripple)		24 V DC (0.95...1.1 Un)					
Consumption		5 W					
References		NY320N2RB1	NY340N4RB1	NY321L2RB1	NY321L1RB1	NY321H2RB1	NY321H1RB1




Module type		Discrete			
		Load excitation outputs			
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50020			
Zone D (dust)		Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)			
EC type examination certificate number / marking		LCIE 00ATEX6034X / II 1 G/D-EEx ia IIC			
Zone 20	Number of load excitation channels	2		4	
	Maximum current	< 7 mA	< 40 mA	< 7 mA	< 40 mA
Outside zone	Control voltage	24 V DC ± 10%			
	Control current	State 1 = 6.5 < I < 9 mA and 21.6 < U < 26.4 V; State 0 = I ≤ 0.4 mA and U ≤ 1.2 V			
Temperature range		- 20...+ 60°C			
Connection		Removable screw terminal blocks			
Mounting		On 35 mm DIN rail			
Dimensions, W x D x H		29.5 x 120 x 90 mm			
Supply voltage (including ripple)		24 V DC (0.95...1.1 Un)			
Consumption		5 W			
References		NY302L0NB1	NY302H0NB1	NY304L0NB1	NY304H0NB1

Limit switches


Miniature, fixing by the body



Limit switch type With head for movement	XCMD metal, pre-cabled Linear (plunger)			
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)	21 - 22			
EC type examination certificate number / marking	INERIS 04ATEX0014X /  II2 D-Ex tD A21 IP66/67 T85°C			
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Retractable steel roller lever plunger
Mechanical durability (millions of operating cycles)	10			
Actuation speed	0.5 m/s			
Switches conforming to standard IEC 947-5-1 section 3	⊕			
Temperature range	- 20...+ 60°C			
Degree of protection (conforming to IEC 60529)	IP66 and IP67			
Rated operational characteristics	AC15; C300 (Ue = 240 V, Ie = 0.75 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)			
Short-circuit protection	By 6 A cartridge fuse type gG (gl)			
Cable entry	Pre-cabled, adjustable direction, length = 5 m			
Fixing centres	20 mm			
Body dimensions, W x D x H	30 x 16 x 50 mm			
References	2 N/C + 2 N/O snap action	XCMD4110L5EX	XCMD4111L5EX	XCMD4102L5EX XCMD4124L5EX

Compact, fixing by the body



Limit switch type With head for movement	XCKD metal conforming to standard EN 500047 Linear (plunger)				
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1				
Zone D (dust)	21 - 22				
EC type examination certificate number / marking	INERIS 04ATEX0014X /  II2 D-Ex tD A21 IP66/67 T85°C				
Type of operator	Metal end plunger	Metal end plunger with elastomer boot	Steel roller plunger	Thermoplastic roller lever plunger, horz. actuation in 1 direct.	Thermoplastic roller lever plunger, vert. actuation in 1 direct.
Mechanical durability (millions of operating cycles)	15		10	15	
Actuation speed	0.5 m/s			1 m/s	
Switches conforming to standard IEC 947-5-1 section 3	⊕				
Temperature range	- 20...+ 60°C				
Degree of protection (conforming to IEC 60529)	IP66 and IP67				
Rated operational characteristics	AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
Short-circuit protection	By 6 A cartridge fuse type gG (gl)				
Cable entry	1 entry fitted with ISO M16 cable gland				
Fixing centres	20 mm				
Body dimensions, W x D x H	31 x 30 x 65 mm				
References	N/C + N/C + N/O snap action	XCKD3910P16EX	XCKD3911P16EX	XCKD3902P16EX	XCKD3921P16EX XCKD3927P16EX

Miniature, fixing by the head



XCMD metal, pre-cabled

Rotary (lever)

Linear (plunger)

Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1

21 - 22

INERIS 04ATEX0014X / II 2 D-Ex tD A21 IP66/67 T85°C

Steel roller lever	Thermoplastic roller lever	Roller lever with ball bearing mounted roller	Variable length thermoplastic roller lever	M12 with metal end plunger	M16 with metal end plunger with elastomer boot	M12 with steel roller plunger
10						
1.5 m/s				0.5 m/s		0.1 m/s
⊖						
-20...+60°C						
IP66 and IP67						
AC15; C300 (Ue = 240 V, Ie = 0.75 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)						
By 6 A cartridge fuse type gG (gl)						
Pre-cabled, adjustable direction, length = 5 m						
20 mm				M12 x 1	M16 x 1	M12 x 1
30 x 16 x 50 mm						
XCMD4116L5EX	XCMD4115L5EX	XCMD4117L5EX	XCMD4145L5EX	XCMD41F0L5EX	XCMD41G1L5EX	XCMD41F2L5EX

Compact, fixing by the head



XCKD metal conforming to standard EN 500047

Linear (plunger) | Rotary (lever)

Multi-directional

Linear (plunger)

Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1

21 - 22


INERIS 04ATEX0014X / II 2 D-Ex tD A21 IP66/67 T85°C

Thermoplastic roller lever plunger, horiz. or vert. actuation in 1 dir.	Thermoplastic roller lever	Thermoplastic roller lever, Ø 50 mm	Variable length thermoplastic roller lever	Variable length thermoplastic roller lever, Ø 50 mm	"Cat's whisker"	M18 with metal end plunger	M18 with steel roller plunger
15	10				5	10	
1 m/s	1.5 m/s				1 m/s	0.5 m/s	
⊖					-	⊖	
-20...+60°C							
IP66 and IP67							
AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)							
By 6 A cartridge fuse type gG (gl)							
1 entry fitted with ISO M16 cable gland							
20 mm						M18 x 1	
30 x 16 x 50 mm							
XCKD3928P16EX	XCKD3918P16EX	XCKD3939P16EX	XCKD3945P16EX	XCKD3949P16EX	XCKD3906P16EX	XCKD39H0P16EX	XCKD39H2P16EX

Limit switches

Classic, fixing by the body




Limit switch type With head for movement	XCKM metal, 3 cable entries				
	Linear (plunger)		Rotary (lever)		Multi-directional
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1				
Zone D (dust)	21 - 22				
EC type examination certificate number / marking	INERIS 04ATEX0014X /  II 2 D-Ex tD A21 IP66/67 T85°C				
Type of operator	Metal end plunger	Steel roller plunger	Thermoplastic roller lever plunger, horiz. actuation in 1 direct.	Thermoplastic roller lever	"Cat's whisker"
Mechanical durability (millions of operating cycles)	20			10	
Actuation speed	0.5 m/s		1.5 m/s	0.5 m/s	
Switches conforming to standard IEC 947-5-1 section 3	☉			-	
Temperature range	- 20...+ 60°C				
Degree of protection (conforming to IEC 60529)	IP66				
Rated operational characteristics	AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
Short-circuit protection	By 6 A cartridge fuse type gG (gl)				
Cable entry	3 tapped entries for ISO M20 cable gland (1)				
Fixing centres	41 mm				
Body dimensions, W x D x H	63 x 30 x 64 mm				
References	N/C + N/C + N/O snap action	XCKM3910H29EX	XCKM3902H29EX	XCKM3921H29EX	XCKM3915H29EX XCKM3906H29EX

(1) 2 entries fitted with blanking plugs, 1 entry fitted with ISO M20 cable gland

Application - hoisting, handling, conveying



Limit switch type With head for movement	XCKMR metal, 3 cable entries	
	Rotary (lever)	
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1	
Zone D (dust)	21 - 22	
EC type examination certificate number / marking	INERIS 04ATEX0014X /  II 2 D-Ex tD A21 IP66/67 T85°C	
Type of operator	Metal rod levers, "crossed"	Metal rod levers, "crossed" reversed head
Mechanical durability (millions of operating cycles)	2	
Actuation speed	1.5 m/s	
Switches conforming to standard IEC 947-5-1 section 3	☉	
Temperature range	- 20...+ 60°C	
Degree of protection (conforming to IEC 60529)	IP66	
Rated operational characteristics	AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 125 V, Ie = 0.55 A)	
Short-circuit protection	By 10 A cartridge fuse type gG (gl)	
Cable entry	3 tapped entries for ISO M20 cable gland (1)	
Fixing centres	61.5 mm	
Body dimensions, W x D x H	118 x 59 x 77 mm	
2 x N/C + N/C staggered, slow break contacts	XCKMR54D1H29EX	XCKMR54D2H29EX
2 x N/C + N/O snap action contacts, both actuated in each direction	-	
2 x N/C + N/O snap action contacts, 1 actuated in each direction	-	
2 x single-pole C/O snap action contacts	-	

(1) 2 entries fitted with blanking plugs, 1 entry fitted with ISO M20 cable gland

Other characteristics: please refer to the "Global Detection" catalogue



XCKJ metal, fixed body, conforming to standard EN 50041

Linear (plunger) | Rotary (lever)

Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1

21 - 22

INERIS 04ATEX0014X / II 2 D-Ex tD A21 IP66/67 T85°C

Metal end plunger	Steel roller plunger	Steel roller lever	Thermoplastic roller lever	Variable length thermoplastic roller lever	Polyamide rod lever, Ø 6 x 200 mm
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30	25	30		20	
0.5 m/s	1 m/s	1.5 m/s			

⊖					
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- 20...+ 60°C

IP66

AC15; B300 (Ue = 240 V, Ie = 1.5 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)

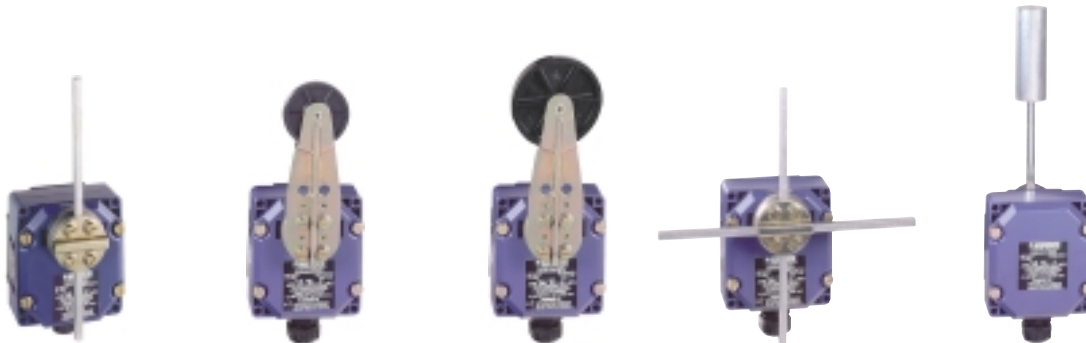
By 6 A cartridge fuse type gG (gl)

1 entry fitted with ISO M20 cable gland

30 x 60 mm

40 x 44 x 77 mm

XCKJ3961H29EX	XCKJ3967H29EX	XCKJ390513H29EX	XCKJ390511H29EX	XCKJ390541H29EX	XCKJ390559H29EX
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XCR metal

Rotary (lever) | Conveyor belt shift monitoring switches

Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1

21 - 22

INERIS 04ATEX0024X / II 2 D-Ex tD A21 IP65 T85°C

Square (6 mm) rod lever, spring return to off position	Thermoplastic roller (Ø 30 mm) lever, spring return to off position	Large thermoplastic roller (Ø 50 mm) lever, spring return to off position	Metal rod levers, "crossed", stay put	Galvanised steel operating lever	Stainless steel operating lever
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10				0.3	
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1.5 m/s					
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⊖					
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- 20...+ 60°C

IP65

AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 250 V, Ie = 0.27 A)

By 10 A cartridge fuse type gG (gl)

1 entry fitted with n° 13 cable gland

85 x 75 mm

85 x 75 x 95 mm

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XCRA111EX	XCRA121EX	XCRA151EX	XCRE181EX (2)	-	
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XCRB111EX	XCRB121EX	XCRB151EX	XCRF171EX (3)	-	
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-				XCRT115EX	XCRT215EX
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(2) "Crossed" rods (3) "T" rods



Type		Vacuum switches and vacu-pressure switches with setting scale		
Size		- 1 bar	- 0.2 bar	5 bar
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1		
Zone D (dust)		21 - 22		
EC type examination certificate number / marking		INERIS 04ATEX0058 /  II 2 D-Ex tD A21 IP66 T85°C		
Fluid connection		1/4" BSP female		
Electrical connection		Screw terminals, 1 entry fitted with ISO M20 cable gland		
Temperature range		- 20...+ 60°C		
Degree of protection		IP66		
Rated operational characteristics		AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)		
Short-circuit protection		By 10 A cartridge fuse type gG (gl)		
Setting range of upper limit (PH)		-0.14...-1 bar	-0.02...-0.2 bar	-0.5...5 bar
Body dimensions, W x D x H		55 x 77.5 x 158 mm	150 x 155.5 x 145 mm	113 x 35 x 75 mm
Fluids controlled		Oil, water, air, up to +70°C	Oil, air, up to +160°C	Oil, water, air, up to +70°C
Possible differential (subtract from PH to give PB) (1)	Min. at low setting	0.13 bar	0.018 bar	0.5 bar
	Min. at high setting	0.13 bar	0.018 bar	0.5 bar
	Max. at high setting	0.8 bar	0.18 bar	6 bar
Single-pole snap action contact		XMLBM02V2S12EX	XMLBM03R2S12EX	XMLBM05A2S12EX

(1) For **XMLBM02V2S12EX** and **XMLBM03R2S12EX** vacuum switches add to PB to give PH



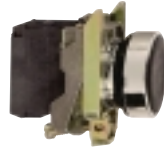
Type		Pressure switches with setting scale		
Size		10 bar	20 bar	35 bar
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1		
Zone D (dust)		21 - 22		
EC type examination certificate number / marking		INERIS 04ATEX0058 /  II 2 D-Ex tD A21 IP66 T85°C		
Fluid connection		1/4" BSP female		
Electrical connection		Screw terminals, 1 entry fitted with ISO M20 cable gland		
Temperature range		- 20...+ 60°C		
Degree of protection		IP66		
Rated operational characteristics		AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)		
Short-circuit protection		By 10 A cartridge fuse type gG (gl)		
Setting range of upper limit (PH)		0.7...10 bar	1.3...20 bar	3.5...35 bar
Body dimensions, W x D x H		35 x 75 x 113 mm		
Fluids controlled		Oil, water, air, up to +70°C		
Possible differential (subtract from PH to give PB)	Min. at low setting	0.57 bar	1 bar	1.7 bar
	Min. at high setting	0.85 bar	1.6 bar	2.55 bar
	Max. at high setting	7.5 bar	11 bar	20 bar
Single-pole snap action contact		XMLB010A2S12EX	XMLB020A2S12EX	XMLB035A2S12EX




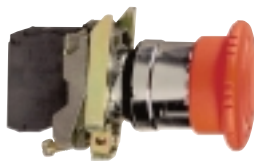
Pressure switches with setting scale				
0.05 bar	0.35 bar	1 bar	2.5 bar	4 bar
Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1				
21 - 22				
INERIS 04ATEX0058 / II 2 D-Ex tD A21 IP66 T85°C				
1/4" BSP female				
Screw terminals, 1 entry fitted with ISO M20 cable gland				
- 20...+ 60°C				
IP66				
AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)				
By 10 A cartridge fuse type gG (gl)				
0.0026...0.05 bar	0.045...0.35 bar	0.05...1 bar	0.3...2.5 bar	0.25...4 bar
200 x 204 x 145 mm	110 x 110 x 162 mm		55 x 77.5 x 158 mm	55 x 77.5 x 158 mm
Oil, air, up to +160°C			Oil, water, air, up to +70°C	
0.0014 bar	0.042 bar	0.04 bar	0.16 bar	0.2 bar
0.004 bar	0.05 bar	0.06 bar	0.21 bar	0.25 bar
0.04 bar	0.3 bar	0.75 bar	1.75 bar	2.4 bar
XMLBL05R2S12EX	XMLBL35R2S12EX	XMLB001R2S12EX	XMLB002A2S12EX	XMLB004A2S12EX




Pressure switches with setting scale			
70 bar	160 bar	300 bar	500 bar
Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
21 - 22			
INERIS 04ATEX0058 / II 2 D-Ex tD A21 IP66 T85°C			
1/4" BSP female			
Screw terminals, 1 entry fitted with ISO M20 cable gland			
- 20...+ 60°C			
IP66			
AC15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A)/DC13; R300 (Ue = 250 V, Ie = 0.1 A)			
By 10 A cartridge fuse type gG (gl)			
7...70 bar	10...160 bar	22...300 bar	30...500 bar
35 x 75 x 113 mm			
Oil, up to +160°C			
4.7 bar	9.3 bar	19.4 bar	23 bar
8.8 bar	20.8 bar	37 bar	52.6 bar
50 bar	100 bar	200 bar	300 bar
XMLB070D2S12EX	XMLB160D2S12EX	XMLB300D2S12EX	XMLB500D2S12EX



Type		Ø 22 pushbuttons with metal bezel					
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1					
Zone D (dust)		21 - 22					
EC type examination certificate number / marking		INERIS 04ATEX9004U /  II 2 D-Ex tD A21 IP65/66					
Mechanical durability (millions of operating cycles)		5					
Temperature range		- 20...+ 60°C					
Degree of protection		IP65 and IP66					
Mounting	Panel cut-out	Ø 22.5 mm (22.4 ^{+0.4} recommended)					
	Mounting centres	30 x 40 mm					
Depth below head		43 mm					
Connection		Screw clamp terminals					
Rated operational characteristics		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)					
Short-circuit protection		By 10 A cartridge fuse type gG (gl)					
Pushbutton type		Flush with transparent silicone boot					
Contact		N/O			N/C	N/O	
Colour of push		● white	● black	● green	● red	● yellow	● blue
References	Insertion of legend not possible	–	XB4BP21EX	XB4BP31EX	XB4BP42EX	XB4BP51EX	XB4BP61EX
	Insertion of legend possible	XB4BP181EX	–	XB4BP381EX	XB4BP482EX	XB4BP581EX	XB4BP681EX
Pushbutton type		Flush with coloured silicone boot					
Contact		N/O			N/C	N/O	
Colour of silicone boot		● white	● black	● green	● red	● yellow	● blue
References		XB4BPS11EX	XB4BPS21EX	XB4BPS31EX	XB4BPS42EX	XB4BPS51EX	XB4BS61EX
Ø 40 mushroom head pushbutton type		Spring return					
Contact		N/O			N/C	N/O	
Colour of push		● black	● green	● red	● yellow	● blue	
References		XB4BC21EX	XB4BC31EX	XB4BC42EX	XB4BC51EX	XB4BC61EX	




Type		Ø 40 mushroom head Emergency stop pushbuttons		
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1		
Zone D (dust)		21 - 22		
EC type examination certificate number / marking		INERIS 04ATEX9004U /  II 2 D-Ex tD A21 IP65/66		
Mechanical durability (millions of operating cycles)		0.3		
Temperature range		- 20...+ 60°C		
Degree of protection		IP65		
Mounting	Panel cut-out	Ø 22.5 mm (22.4 ^{+0.4} recommended)		
	Mounting centres	30 x 40 mm		
Depth below head		43 mm		
Connection		Screw clamp terminals		
Rated operational characteristics		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)		
Short-circuit protection		By 10 A cartridge fuse type gG (gl)		
Ø 40 latching mushroom head pushbutton type		Push-pull with trigger action	Key release (n° 455)	Turn to release
Contact(s)		N/C + N/O	N/C	N/C
Colour of push		● red	● red	● red
References		XB4BT845EX	XB4BS142EX	XB4BS542EX

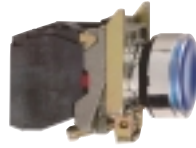
Selector switches and key switches


Contact functions

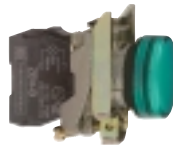



Type		Ø 22 selector switches and key switches with metal bezel	
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1	
Zone D (dust)		21 - 22	
EC type examination certificate number / marking		INERIS 04ATEX9004U /  II 2 D-Ex tD A21 IP65/66	
Mechanical durability (millions of operating cycles)		3	
Temperature range		- 20...+ 60°C	
Degree of protection		IP65	
Mounting	Panel cut-out	Ø 22.5 mm (22.4 ^{+0.4} recommended)	
	Mounting centres	30 x 40 mm	
Depth below head		43 mm	
Connection		Screw clamp terminals	
Rated operational characteristics		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A) DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)	
Short-circuit protection		By 10 A cartridge fuse type gG (gl)	
Selector switch type		Standard handle	
Contacts		N/C + N/O	N/O + N/O
Colour		● black	● black
References	2 position stay put	XB4BD25EX	-
	3 position stay put	-	XB4BD33EX
	3 position spring return to centre	-	XB4BD53EX
Selector switch type		Long handle	
Contact(s)		N/O	N/O + N/O
Colour		● black	● black
References	2 position stay put	XB4BJ21EX	-
	3 position stay put	-	XB4BJ33EX
	3 position spring return to centre	-	XB4BJ53EX
Key switch type		Key n° 455	
Contact(s)		N/O	N/O + N/O
Colour		● black	● black
References	2 position stay put, key withdrawal in LH position	XB4BG21EX	-
	2 position stay put, key withdrawal in both positions	XB4BG41EX	-
	2 position spring return, key withdrawal in LH position	XB4BG61EX	-
	3 position stay put, key withdrawal in centre position	-	XB4BG33EX
	3 position stay put, key withdrawal in all 3 positions	-	XB4BG03EX

Other characteristics: please refer to the "Human-Machine Interface components" catalogue



Type		Ø 22 illuminated pushbuttons with metal bezel					
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1					
Zone D (dust)		21 - 22					
EC type examination certificate number / marking		INERIS 04ATEX9004U /  II 2 D-Ex tD A21 IP65/66					
Mechanical durability (millions of operating cycles)		5					
Service life		100,000 hours at ambient temperature					
Temperature range		- 20...+ 60°C					
Degree of protection		IP65					
Mounting	Panel cut-out	Ø 22.5 mm (22.4 $^{+0.4}_0$ recommended)					
	Mounting centres	30 x 40 mm					
Depth below head		43 mm					
Connection		Screw clamp terminals					
Rated operational characteristics		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)					
Short-circuit protection		By 10 A cartridge fuse type gG (gl)					
Light source		Integral LED					
Illuminated pushbutton type, with integral LED		Flush with transparent silicone boot					
Contact		N/O		N/C		N/O	
Colour of push		● white	● green	● red	● yellow	● blue	
References	LED voltage	24 V AC/DC	XB4BP183B5EX	XB4BP383B5EX	XB4BP483B5EX	XB4BP583B5EX	XB4BP683B5EX
		120 V AC	XB4BP183G5EX	XB4BP383G5EX	XB4BP483G5EX	XB4BP583G5EX	XB4BP683G5EX
		240 V AC	XB4BP183M5EX	XB4BP383M5EX	XB4BP483M5EX	XB4BP583M5EX	XB4BP683M5EX
		24...120 V AC	XB4BP183BG5EX	XB4BP383BG5EX	XB4BP483BG5EX	XB4BP583BG5EX	XB4BP683BG5EX



Type		Ø 22 pilot lights with metal bezel					
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1					
Zone D (dust)		21 - 22					
EC type examination certificate number / marking		INERIS 04ATEX9004U /  II 2 D-Ex tD A21 IP65/66					
Service life		100,000 hours at ambient temperature					
Temperature range		- 20...+ 60°C					
Degree of protection		IP65					
Mounting	Panel cut-out	Ø 22.5 mm (22.4 $^{+0.4}_0$ recommended)					
	Mounting centres	30 x 40 mm					
Depth below head		43 mm					
Connection		Screw clamp terminals					
Rated operational characteristics		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)					
Short-circuit protection		By 10 A cartridge fuse type gG (gl)					
Light source		Integral LED					
Pilot light type		Pilot lights with integral LED, plain lens					
Colour of LED		● white	● green	● red	● yellow	● blue	
References	LED voltage	24 V AC/DC	XB4BVB1EX	XB4BVB3EX	XB4BVB4EX	XB4BVB5EX	XB4BVB6EX
		24...120 V AC/DC	XB4BVG1EX	XB4BVG3EX	XB4BVG4EX	XB4BVG5EX	XB4BVG6EX
		240 V AC	XB4BVM1EX	XB4BVM3EX	XB4BVM4EX	XB4BVM5EX	XB4BVM6EX
		48...120 V AC	XB4BVBG1EX	XB4BVBG3EX	XB4BVBG4EX	XB4BVBG5EX	XB4BVBG6EX

Control stations

Complete stations, metal or plastic



Type		Complete control stations			
Type of operators		Ø 22 flush pushbuttons			
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)		21 - 22			
EC type examination certificate number / marking		INERIS 04ATEX0023 / II 2 D-Ex tD A21 IP65 T85°C			
Temperature range		- 20...+ 60°C			
Degree of protection		IP65			
Connection		1 entry fitted with ISO M20 cable gland			
Rated operational characteristics of contact blocks		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A) DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)			
Short-circuit protection		By 10 A cartridge fuse type gG (gl)			
Function		1 function, Start or Stop	2 functions, Start - Stop	3 functions	
Composition		1 spring return pushbutton	2 spring ret. pushbuttons	3 spring ret. pushbuttons	
Contact(s)		N/O	N/C	N/O + N/C	N/O + N/C + N/O
Colour of pushbutton(s)		● green	● red	● green + ● red	● green + ● red + ● black
Metal control stations	Dimensions, W x D x H	80 x 77 x 80 mm		80 x 130 x 77 mm	80 x 175 x 77 mm
	Fixings: 4 x Ø 5.6 mm, centres	50 x 65 mm		50 x 115 mm	50 x 160 mm
References		XAWF100EX	XAWF110EX	XAWF210EX	XAWF310EX
Plastic control stations	Dimensions, W x D x H	85 x 146 x 70 mm		85 x 226 x 70 mm	
	Fixings: 4 x Ø 5.6 mm, centres	70 x 105 mm		70 x 108 mm	
References		XAWG100EX	XAWG110EX	XAWG210EX	XAWG310EX



Type		Complete control stations			
Type of operator		Ø 22 selector switch or key switch with metal bezel		Ø 40 mushroom head Emergency stop	
Conformity		Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)		21 - 22			
EC type examination certificate number / marking		INERIS 04ATEX0023 / II 2 D-Ex tD A21 IP65 T85°C			
Temperature range		- 20...+ 60°C			
Degree of protection		IP65			
Connection		1 entry fitted with ISO M20 cable gland			
Rated operational characteristics of contact blocks		AC15; A 600 (Ue = 600 V, Ie = 1.2 A or Ue = 240 V, Ie = 3 A or Ue = 120 V, Ie = 6 A) DC13; Q600 (Ue = 600 V, Ie = 0.1 A or Ue = 250 V, Ie = 0.27 A or Ue = 125 V, Ie = 0.55 A)			
Short-circuit protection		By 10 A cartridge fuse type gG (gl)			
Function		1 function, Start/Stop		Emergency stop	
Composition		1 selector switch (1) standard black handle	1 key switch (1) key n° 455	1 Ø 40 mushroom head turn to release	1 Ø 40 mushroom head key release
Contact		N/O	N/O	N/C	N/C
Colour of operator		● black	● black	● red	● red
Metal control stations	Dimensions, W x D x H	80 x 77 x 80 mm		80 x 130 x 77 mm	80 x 175 x 77 mm
	Fixings: 4 x Ø 5.6 mm, centres	50 x 65 mm		50 x 115 mm	50 x 160 mm
References		XAWF130EX	XAWF140EX	XAWF198EX	XAWF184EX
Plastic control stations	Dimensions, W x D x H	80 x 77 x 80 mm		85 x 146 x 70 mm	
	Fixings: 4 x Ø 5.6 mm, centres	70 x 105 mm		70 x 108 mm	
References		XAWG130EX	XAWG140EX	XAWG198EX	XAWG184EX


(1) 2 position stay put

Other characteristics: please refer to the "Human-Machine Interface components" catalogue

Emergency stops and foot switches


Cable (tripwire) operated Emergency stops



For operating cable up to 50 m long		Latching, without indicator light			
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1				
Zone D (dust)	21 - 22				
EC type examination certificate number / marking	INERIS 04ATEX0015 / 				
Mechanical durability (millions of operating cycles)	0.01				
Temperature range	- 20...+ 60°C				
Degree of protection	IP65				
Connection	3 entries for ISO M20 cable gland				
Rated operational characteristics	AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 250 V, Ie = 0.27 A)				
Short-circuit protection	By 10 A cartridge fuse type gG (gl)				
Dimensions, W x D x H	229 x 82 x 142 mm		229 x 105 x 142 mm		
Reset	By booted pushbutton		By key release pushbutton (key n° 421)		
Operating cable length	≤ 50 m		≤ 50 m		
Operating cable anchoring point	To left	To right	To left	To right	
References	N/C + N/O slow break	XY2CE2A250EX	XY2CE1A250EX	XY2CE2A450EX	XY2CE1A450EX
	N/C + N/C slow break	XY2CE2A270EX	XY2CE1A270EX	XY2CE2A470EX	XY2CE1A470EX

Foot switches, metal



Type	Single pedal switches			
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50281-1-1, pr IEC 61241-0, pr IEC 61241-1			
Zone D (dust)	21 - 22			
EC type examination certificate number / marking	INERIS 04ATEX0025 / 			
Mechanical durability (millions of operating cycles)	5			
Temperature range	- 20...+ 60°C			
Degree of protection	IP66			
Connection	2 entries for n° 16 (Pg 16) cable gland (1)			
Rated operational characteristics	AC15; A300 (Ue = 240 V, Ie = 3 A)/DC13; Q300 (Ue = 250 V, Ie = 0.27 A)			
Short-circuit protection	By 10 A cartridge fuse type gG (gl)			
Dimensions, W x D x H	104 x 172 x 59 mm			
Colour	Blue		Orange	
Contact operation	1 step	2 step	1 step	2 step
References	1 N/C + N/O	XPEM110EX	–	XPER110EX
	2 N/C + N/O	XPEM111EX	XPEM211EX	XPER111EX

(1) 1 entry fitted with blanking plug, 1 entry fitted with n° 16 (Pg 16) cable gland



Automation platform

Weighing system for Modicon Premium



Module type	ISP Plus Supplied calibrated	
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50020, EN 50039, EN 50284, EN 50281-1-1	
Zone D (dust)	Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)	
EC type examination certificate number / marking	LCIE 03ATEX6399X / II2 G/D-EEEx ib IIC T6 or IIB T6	
Connection	By connectors: Sub-D 15-way male for sensors and Sub-D 9-way male for transfer of weights	
Load cell inputs	50 measurements (for 1 to 8 load cells)	
Outputs	2 discrete and 1 RS 485 for display	
References	Without display	TSXISPY101
	With display TSXXBTH100	TSXISPY111

Intrinsically safe I/O modules for Modicon Quantum



Module type	Inputs/outputs				
	Discrete		Analogue		
Conformity	Directive ATEX D 94/9/EC, EN 50014, EN 50020, EN 50284, EN 50281-1-1				
Zone D (dust)	Mounted outside zone (to be used in conjunction with products for zone 20, 21 or 22)				
EC type examination certificate number / marking	SIRA 02ATEX2345X / II1 G/D-EEEx ia IIC				
Connection	By screw terminal block 140XTS33200 (to be ordered separately)				
Number of inputs	8	–	8	–	–
Number of outputs	–	8	–	–	8
Signal inputs	–	–	Thermal probes	0...25/20 mA	
			Thermocouple (1)	4...25 mA	
Resolution			12 bits + sign	0...25,000 points	15 bits
References	140DII33000	140DIO33000	140AII33000	140AII33010	140AIO33000

(1) Type J, K, E, T, S, R, B, mV

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